WHAT IS CLAIMED IS:

1. An epoxy resin composition for encapsulation of semiconductors which comprises, as essential components, (A) a spherical alumina, (B) an ultrafine silica having a specific surface area of 120-280 m^2/g, (C) a silicone compound, (D) an epoxy resin, (E) a phenolic resin curing agent, and (F) a curing accelerator, said ultrafine silica being contained in an amount of 0.2-0.8% by weight based on the total weight of the resin composition.

2. An epoxy resin composition according to claim 1, wherein the silicone compound (C) is a polyorganosiloxane and the amount of the silicone compound is 0.3-2.0% by weight based on the total weight of the resin composition.

3. A semiconductor apparatus in which a semiconductor element is mounted on one side of a substrate and substantially only the one side of the substrate on which the semiconductor element is mounted is encapsulated with the epoxy resin composition for semiconductor encapsulation of claim 1.

4. A semiconductor apparatus in which a semiconductor element is mounted on one side of a substrate and substantially only the one side of the substrate on which the semiconductor element is mounted is encapsulated with the epoxy resin composition for semiconductor encapsulation of claim 2.